

CLAIMS
Revised

- AI
1. A rotary barrier face seal for sealing a toxic
5 process fluid at a space between a housing and a rotatable
shaft, comprising:
- a stationary ring unit coaxially surrounding said
rotatable shaft within said housing and arranged for movement
axially of said rotatable shaft under a resilient pressure;
- 10 a rotary ring unit coaxially surrounding said rotatable
shaft within said housing and prevented from axial movement
relative to said rotatable shaft when in operation position;
- each of said ring units having an end face for mutual
engagement under said resilient pressure to form a sealing
15 interface;
- one of said ring units being mounted for rotation with
said rotatable shaft;
- one of said end faces comprising a plurality of helical
grooves, said plurality of helical grooves extending inward,
20 the innermost extent of said plurality of helical grooves
defining an inner groove diameter, said inner groove diameter
being larger than the diameter of the innermost extent of
either of said end faces;
- one of said end faces comprises a plurality of crescent-
25 shaped pockets each containing a buffer gas supply opening
adjacent each terminus of each pocket and each said opening
being positioned at a fluid supply diameter concentric with
said rotatable shaft and communicating with said sealing
interface each supply opening being positioned above a buffer
30 gas supply bore, the diameter of the supply opening being
larger than the diameter of the supply bore; and
- buffer fluid supply means communicating with said at
least one supply bore to supply a buffer fluid to the sealing

A1 interface.

2. A rotary barrier face seal according to claim 1 wherein the outer most extend of said plurality of helical grooves coincides with the outermost extent of that said end face which includes said plurality of helical grooves.

3. A rotary barrier face seal according to claim 1 wherein the outermost extent of said plurality of helical grooves defines an outer groove diameter, said outer groove diameter being smaller than the diameter of the outer most extent of either of said faces.

4. Cancel ✓

5. A rotary barrier face seal according to claim 2 wherein one of said end faces comprises at least one crescent-shaped pocket communication with said at least one supply bore.

6. Cancel ✓

7. Cancel ✓

8. Cancel ✓

9. Cancel ✓

A2 20 10. A rotary barrier face seal according to claim 1 in which said crescent-shaped pockets extend around the end face along said fluid diameter.

CLAIMS

Version showing changes made

1. A rotary barrier face seal for sealing a toxic
5 process fluid at a space between a housing and a rotatable
shaft, comprising:

a stationary ring unit coaxially surrounding said
rotatable shaft within said housing and arranged for movement
axially of said rotatable shaft under a resilient pressure;

10 a rotary ring unit coaxially surrounding said rotatable
shaft within said housing and prevented from axial movement
relative to said rotatable shaft when in operation position;

each of said ring units having an end face for mutual
engagement under said resilient pressure to form a sealing
15 interface;

one of said ring units being mounted for rotation with
said rotatable shaft;

one of said end faces comprising a plurality of helical
grooves, said plurality of helical grooves extending inward,
20 the innermost extent of said plurality of helical grooves
defining an inner groove diameter, said inner groove diameter
being larger than the diameter of the innermost extent of
either of said end faces;

[at least one of said ring units having at least one
25 supply bore having supply opening communicating with said
sealing interface;

one of said end faces comprises a plurality of crescent-
shaped pockets each containing a buffer gas supply opening
adjacent each terminus of each pocket and each said opening
30 being positioned at a fluid supply diameter concentric with
said rotatable shaft and communicating with said sealing
interface each supply opening being positioned above a buffer
gas supply bore, the diameter of the supply opening being

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larger than the diameter of the supply bore; and

said supply opening positioned at a fluid supply diameter concentric with said rotatable shaft, said fluid supply diameter being larger than said groove diameter; and]

5 buffer fluid supply means communicating with said at least one supply bore to supply a buffer fluid to the sealing interface.

2. A rotary barrier face seal according to claim 1 wherein the outer most extend of said plurality of helical
10 grooves coincides with the outermost extent of that said end face which includes said plurality of helical grooves.

3. A rotary barrier face seal according to claim 1 wherein the outermost extent of said plurality of helical grooves defines an outer groove diameter, said outer groove
15 diameter being smaller than the diameter of the outer most extent of either of said faces.

4. Cancel

5. A rotary barrier face seal according to claim 2 wherein one of said end faces comprises at least one
20 crescent-shaped pocket communication with said at least one supply bore.

6. Cancel

7. Cancel

8. Cancel

25 9. Cancel

10. A rotary barrier face seal according to claim 1 in which said crescent-shaped pockets extend around the end face along said fluid diameter.